

The Effect of Music Therapy on Patients' Blood Pressure in Endoscopy Unit in Bou-Ali hospital, Ardebil

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Abstract

BACKGROUND: Today, endoscopic evaluation of digestive system is an important diagnostic approach in gastrointestinal diseases. As it is an invasive method, it causes fear and anxiety in patients. The current study was fulfilled to evaluate the effect of music therapy during endoscopy on the anxiety of patients by measuring blood pressure.

METHODS: This is an experimental study of single blind clinical trial type. The participants were patients in the endoscopy unit in the age range of 30 to 60, undergoing endoscopy or colonoscopy for the first time with negative history of cardiovascular diseases or hypertension. Cases were randomly placed in two groups: the experiment group who listened to music during the procedure and the control group who did not listen to music during the procedure. The patients' blood pressures, arterial blood oxygen saturation during the procedure as well as their demographic information were recorded. Finally, the data was analyzed using t- test and analysis of variance by SPSS software.

RESULTS: Our results demonstrated that patients of the experiment group had lower systolic and diastolic blood pressure and higher arterial blood oxygen saturation comparing to control group, but the difference was not statistically significant. Also it was showed that the blood pressure altered more in the patients underwent colonoscopy comparing those underwent endoscopy. The difference was statistically significant. ($p= 0.034$) Mean duration of endoscopy procedure in control group was higher than that of the experiment group.

CONCLUSIONS: Light music has useful effects on cooperation and tolerance of patients during the procedure by regulating blood pressure and oxygen saturation of blood and reducing the duration of the procedure.

KEY WORDS: Music, endoscopy, blood pressure, anxiety

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Today, endoscopic evaluation of digestive system is an important diagnostic approach in gastrointestinal diseases. As it is an invasive method, it causes fear and anxiety, hemodynamic changes and decrease in blood oxygen saturation ⁽¹⁾. In recent years, researchers seek effective non-pharmacological and non-invasive methods to reduce anxiety. In this regard, several studies were carried out to evaluate the effect of music therapy and different types of music on anxiety control ⁽²⁾.

Different types of music such as classical and relaxing music would increase patients' tolerance during endoscopy procedure and help them get relaxed due to its neuro-

logical effects ⁽³⁾. Michigan University studies revealed that some types of music have effect on heart rate, respiratory rate and also endorphin release ⁽⁴⁾. As clinical indications of diagnostic endoscopy and colonoscopy increase, it is necessary to find appropriate non-invasive and non-pharmacological relaxing methods to reduce the procedure induced anxiety. Music therapy is a non-invasive method to reduce the anxiety caused by the procedure. As there were not any similar studies, the current study was carried out to evaluate the effect of music therapy on blood pressure (BP) as the index of anxiety in patients undergoing endoscopy or colonoscopy. It was supposed that

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music therapy would affect BP and blood oxygen saturation.

Methods

This is an experimental study of single blind clinical trial type, carried out on the patients admitted at the endoscopy unit of Bou-Ali hospital, Ardebil, in year 2004.

Among the admitted patients for endoscopy and colonoscopy, ninety patients were randomly selected and divided into experiment and control groups. Before starting the project, the protocols of the study was presented to the research academics and considering the ethical aspects, music therapy protocol was approved. As music therapy was used every other day and no intervention was done, no consent was needed. It was a single blind study as the patient was unaware of the group he/ she was placed in, but the nurse recording BP and pulse oximetry results was aware of the category. Inclusion criteria were being candidate of endoscopy or colonoscopy, negative history of hypertension, no previous history of endoscopy or colonoscopy, being in the age range of 30-60, not having taken sedative drugs before the procedure and having no serious hearing problems. The data was collected using a questionnaire which contained demographic data, age, sex, BP and arterial blood oxygen saturation. BP and arterial blood oxygen saturation was measured using portable barometer (ALPK2, Japan) and pulse oximeter (Nellcore, Germany). In pilot phase, classical Azeri music was used and it was shown to have no conflict with the cultural background of the patients. The data was analyzed using SPSS software. Using descriptive analysis methods, the data was tabulated according to frequency and percentage. Analytical methods of t- test and variance analysis were, then, utilized.

Results

In the study, 66.7% cases were female. Comparison of mean systolic and diastolic BP on admission and during procedure (at 1st and 5th minute) using t-test did not reveal significant

statistical differences between the two groups. Mean systolic BP was 121.3 and 125.3 mmHg at 1st minute and 115.3 and 119.6 mmHg at 5th minute in music therapy and control groups, respectively. In addition, mean diastolic BP was 66.3 and 77.1 mmHg at 1st minute and 64.4 and 60.2 mmHg at 5th minute and 60.2 and 80.4 at the end of the procedure in music therapy and control groups, respectively. Findings demonstrated that mean arterial blood oxygen saturation was 97.4% and 97.5% at 1st minute and 97.4% and 96% at 5th minute in music therapy group and control group, respectively. Mean duration of procedure was respectively 10.7 and 12.4 minutes in the experiment and control group.

Table 1. Results of variance analysis of variables in experiment and control group

Variables	Experiment group Mean	Control group Mean	F quantity for variance analysis test	Sig.
SBP* on admission	123.8	121.3	0.52	0.5
DBP** on admission	66.7	63.8	1.46	0.2
SBP at 1 st min.	121.3	125.3	1.36	0.2
DBP at 1 st min.	66.2	77.1	0.6	0.5
SBP at 5 th min.	119.9	123.4	0.81	0.4
DBP at 5 th min.	64.4	65.3	0.1	0.7
Final SBP	115.3	119.6	1.6	0.2
Final DBP	60.2	80.4	1.3	0.3
Final blood oxygen saturation	96	95.8	0.06	0.8
Duration of the procedure	10.7	12.4	1.6	0.2

* SBP: Systolic Blood Pressure

**DBP: Diastolic Blood Pressure

Finally, there was significant statistical difference between the mean systolic and diastolic BP in the two groups regarding the type of procedure. ($p= 0.034$) (Table 1).

Discussion

Various studies demonstrated that stress-inducing therapeutic procedures cause an increase in BP by catecholamine release. Results of the study showed that, although BP increased on admission and at the 1st and 5th minutes of the procedure in control group, systolic and diastolic BP in the music therapy and control group were not significantly dif-

ferent. Various studies revealed that music therapy reduces the anxiety of patients and causes BP and heart rate reduction ⁽¹⁾. A study on 45 myocardial infarction patients showed that music therapy decreased the heart and respiratory rate and also anxiety of the patients ⁽⁵⁾.

Another study on seventeen post surgical patients indicated that music could lead to decrease in vital signs ⁽⁶⁾. Also, another study on patients receiving mechanical ventilation support showed that music would lessen heart rate, BP and anxiety of patients ⁽⁷⁾.

In current study, it was showed that the arterial blood oxygen saturation during the procedure (at 1st and 5th minutes) and also at the end of the procedure decreased in both groups, but the changes at the 1st and 5th minutes in control group was significant. It is compatible with the results of another study carried out in Iran; which indicated that arterial blood oxygen saturation differs significantly before and after endoscopy ⁽⁸⁾.

As well, it was demonstrated that BP changes in patients underwent colonoscopy was more than those underwent endoscopy. Regarding systolic BP, the difference of changes was significant between endoscopy

and colonoscopy patients. In another study on 63 patients, it was showed that mean BP was higher in patients undergoing endoscopy than those undergoing colonoscopy ⁽⁹⁾.

In addition, finding of the study showed that mean duration of the procedure in music therapy group was less than the control group which possibly indicates better cooperation and tolerance of the patients received music therapy. Hearing relaxing music, medical staff also feels relaxed which can affect the anxiety of patients. As only three patients of the study received midazolam for sedation, effects of the drug in combination with music therapy was not evaluated. Generally, our findings demonstrate that relaxing music could have useful effects on BP, arterial blood oxygen saturation and anxiety of patients undergoing endoscopy and relaxes them. It is recommended to use light music in all wards and waiting rooms of the hospitals to reduce the anxiety of patients and also medical staff to some extent.

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